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CATALOGUE

OF THE

MASSACHUSETTS

AGRICULTURAL COLLEGE

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1902-1903

CATALOGUE

OF THE

MASSACHUSETTS

AGRICULTURAL COLLEGE

1902-1903

AMHERST
PUBLISHED BY THE COLLEGE
1903

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Thomas Arkle Clark

Calendar for 1902-1903

1902			
September	18	THURSDAY	First semester began at 8 A. M.
November	27	THURSDAY	Thanksgiving Day
December	18	THURSDAY	Holiday recess began
1903			
January	7	THURSDAY	8 A. M. Holiday recess ends
February	4	WEDNESDAY	First semester ends
February	5	THURSDAY	8 A. M. Second semester begins
March	28	SATURDAY	Spring recess begins
April	2	THURSDAY	8 A. M. Spring recess ends
June	13	SATURDAY	Grinnell prize examination of senior class in Agriculture
June	14	SUNDAY	Baccalaureate sermon
June	15	MONDAY	Flint prize oratorical contest Burnham prize speaking
June	16	TUESDAY	Meeting of the alumni Class day exercises, battalion drill, reception by the president and the trustees
June	17	WEDNESDAY	Commencement exercises
June	18, 19	THURSDAY AND FRIDAY	8-30 A. M. Examinations for admission at Botanic Museum, Amherst; Jacob Sleeper Hall, Boston University, 12 Somerset Street, Boston; Pittsfield; Horticultural Hall, Worcester
		Vacation of Thirteen Weeks	
September	17, 18	TUESDAY AND WEDNESDAY	8-30 A. M. Examinations for admission, Botanic Museum
September	17	THURSDAY	8 A. M. First semester begins
November	26	THURSDAY	Thanksgiving Day
December	23	WEDNESDAY	Holiday recess begins
1904			
January	6	WEDNESDAY	8 A. M. Holiday recess ends

Origin, Object, and Location

The Massachusetts Agricultural College was among the first of the institutions to be established under the provisions of the National Land-Grant Act of 1862. This Act donated "public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts." The framer of this bill was the late Senator Justin Smith Morrill of Vermont. At the present time over sixty institutions of higher learning in this country directly owe their origin or their prosperity to the benefits of this great educational measure.

The college was incorporated in 1864 by an Act of the State Legislature; and on the second of October, 1867, was formally opened to an entering class of thirty-three.

In January, 1875, an arrangement was made with the authorities of Boston University, whereby the college, without losing its independence, should thereafter become the "School of Agriculture" of the university. By means of this arrangement, students of the Massachusetts Agricultural College, besides obtaining the regular diploma of the college, which is accepted by American universities and by the University of Göttingen, in Germany, may, upon payment of a fee, and under certain conditions, receive the diploma in science awarded to graduates of the Boston institution. In 1882 the State Experiment Station was located on the college grounds. The station has since become connected with the college.

The college offers a free education to any American student who may be of good character and who may fulfil the requirements for admission. Women are admitted to the courses of the

institution with a few exceptions on the same conditions as men. It also offers its course of study to foreign students upon payment by them of a tuition fee. It gives a four years' course leading to the degree of Bachelor of Science, and graduate courses leading to the degrees of Master of Science and of Doctor of Philosophy. It also offers a winter course of ten weeks, and a special course of two weeks in bee culture.

The college is situated in the beautiful town of Amherst. The grounds are especially attractive, and comprise over 400 acres of land, lying about a mile north of the village center. The equipment of the college, both in buildings and facilities for instruction, is excellent.

Amherst is ninety-seven miles west of Boston. It is on the line of the Southern Division (Central Massachusetts Railroad) of the Boston and Maine Railroad, as well as on that of the Central Vermont Railway. It is easily accessible.

The Corporation

	Term expires
HENRY S. HYDE, Springfield	1904
MERRITT I. WHEELER, Great Barrington	1904
WILLIAM R. SESSIONS, Springfield	1905
CHARLES L. FLINT, Brookline	1905
WILLIAM H. BOWKER, Boston	1906
GEORGE H. ELLIS, Boston	1906
J. HOWE DEMOND, Northampton	1907
ELMER D. HOWE, Marlborough	1907
NATHANIEL I. BOWDITCH, Framingham	1908
WILLIAM WHEELER, Concord	1908
ELIJAH W. WOOD, West Newton	1909
CHARLES A. GLEASON, New Braintree	1909
JAMES DRAPER, Worcester	1910
SAMUEL C. DAMON, Lancaster	1910

MEMBERS EX OFFICIO

His Excellency JOHN L. BATES
Governor of the Commonwealth

HENRY H. GOODELL
President of the College

FRANK A. HILL
Secretary of the Board of Education

JAMES W. STOCKWELL
Secretary of the Board of Agriculture

OFFICERS OF THE CORPORATION

His Excellency Governor JOHN L. BATES Boston
President

WILLIAM R. SESSIONS . . . . Springfield
Vice-President

JAMES W. STOCKWELL . . . . . Boston
Secretary

GEORGE F. MILLS . . . . . Amherst
Treasurer

CHARLES A. GLEASON . . . New Braintree
Auditor

Board of Overseers

STATE BOARD OF AGRICULTURE

EXAMINING COMMITTEE OF OVERSEERS

John Bursley (Chairman) . . . West Barnstable
C. K. Brewster . . . . . Worthington
C. H. Shaylor . . . . . Lee
Alvan Barrus . . . . . Goshen
Warren C. Jewett . . . . . Worcester

Faculty

HENRY H. GOODELL, LL.D.
President of the College

LEVI STOCKBRIDGE
Professor of Agriculture, Honorary

CHARLES A. GOESSMANN, PH.D., LL.D.
Professor of Chemistry

CHARLES WELLINGTON, A.M., PH.D.
Associate Professor of Chemistry

CHARLES H. FERNALD, A.M., PH.D.
Professor of Zoölogy

REV. CHARLES S. WALKER, A.M., PH.D.
Professor of Political Science, Chaplain, and Secretary of the Faculty

WILLIAM P. BROOKS, PH.D.
Professor of Agriculture

GEORGE F. MILLS, A.M.
Professor of English and Latin

JAMES B. PAIGE, D.V.S.
Professor of Veterinary Science

GEORGE E. STONE, PH.D.
Professor of Botany

JOHN E. OSTRANDER, A.M., C.E.
Professor of Mathematics and Civil Engineering

HENRY T. FERNALD, PH.D.
Professor of Entomology

JOHN ANDERSON, CAPTAIN, U.S.A.
Professor of Military Science and Tactics

FRANK A. WAUGH, M.SC.
Professor of Horticulture

HERMAN BABSON, A.M.
Assistant Professor of English

FRED S. COOLEY, B.SC.
Assistant Professor of Agriculture

*RICHARD S. LULL, M.SC.
Associate Professor of Zoölogy, and Curator of the Zoölogical Museum

RALPH E. SMITH, B.SC.
Assistant Professor of Botany, and Instructor in German

PHILIP B. HASBROUCK, B.SC.
Assistant Professor of Mathematics and Physics

S. FRANCIS HOWARD, M.SC.
Assistant Professor of Chemistry

LOUIS R. HERRICK, B.SC.
Instructor in French

HOWARD L. KNIGHT, B.SC.
Instructor in Chemistry

GEORGE A. DREW, B.SC.
Instructor in Horticulture

FREDERICK B. LOOMIS, PH.D.
Instructor in Zoölogy

ARTHUR A. HARMON, D.V.S.
Instructor in Veterinary Science

DAVID N. WEST, B.SC.
Assistant in Mathematics

ROBERT W. LYMAN, LL.B.
Lecturer on Farm Law

E. FRANCES HALL
Librarian

**Absent on leave*

PHILIP B. HASBROUCK, B.SC.
Registrar

ELISHA A. JONES, B.SC.
Superintendent of Farm

NEWTON WALLACE
Electrician

P. E. NAYLOR
Steward of Dining Hall

Committees of the Faculty

Instruction: Professors MILLS, OSTRANDER, WELLINGTON, the REGISTRAR

Athletics: Professors PAIGE, BROOKS, ANDERSON, HOWARD

Catalogue: Professors WALKER, OSTRANDER, BABSON, the REGISTRAR

Entrance Examinations: Professors MILLS, LULL, BABSON, HASBROUCK

Rules: Professors WALKER, LULL, BABSON

Graduate Courses: Professors C. H. FERNALD, WELLINGTON, STONE, H. T. FERNALD

Schedule: Professors OSTRANDER, HASBROUCK

Dining Hall: Professors MILLS, HASBROUCK

Chairman of the meetings of the instructors of the several classes
Senior class: Professor MILLS
Junior class: Professor WELLINGTON
Sophomore class: Professor OSTRANDER
Freshman class: Professor BABSON

Admission

Every candidate for admission must be at least sixteen years of age, and must present a testimonial of good character from the principal of the last school that he attended.

FOUR-YEARS' COURSE

Candidates for admission to the freshman class will be received on certificate, as explained below, or on examination in the following subjects:

Algebra, through quadratics. Plane geometry. English. General history, Myers' *General History*. Civil government, Mowry's *Studies in Civil Government*. Physiology, Martin's *The Human Body*, briefer course. Physical geography.

This examination may be oral or written; the standard required for passing is 65 per cent. in each subject. Knowledge of the principles of arithmetic is presupposed, although an examination in this subject is not required. Inasmuch as it is found that candidates are frequently deficient in algebra and geometry, they are urged to obtain such drill in these subjects as shall secure accuracy and readiness in the application of principles to practical examples; furthermore no student found unsatisfactory in both of these subjects will be admitted to the college.

A candidate will not be accepted in English whose work is notably deficient in point of spelling, punctuation, phraseology, or division into paragraphs. The candidate will be required to present evidence of a general knowledge of the subject-matter of books named below, and to answer questions on the lives of their authors. The form of examination will usually be the writing of a paragraph or two on each of several topics to be chosen by the candidate from a considerable number—perhaps ten or fifteen—set before him in the examination paper. The treatment of these topics is designed to test the candidate's power of clear and accurate expression, and will imply

only a general knowledge of the substance of the books. The books set for examination in 1903 and 1904 are: Shakespeare's *The Merchant of Venice;* Goldsmith's *The Vicar of Wakefield;* Scott's *Ivanhoe;* Tennyson's *The Princess;* Lowell's *The Vision of Sir Launfal;* George Eliot's *Silas Marner.*

TIME, PLACES, AND ORDER OF EXAMINATIONS

The regular examinations for admission in 1903 will be held in the Botanic Museum of the Agricultural College, in Amherst, on Thursday and Friday, June 18 and 19, and on Tuesday and Wednesday, September 15 and 16, as follows:

First day:	8-30 A. M.	Registration
	9-00 A. M.	English
	11-00 A. M.	General history
	2-00 P. M.	Geometry
Second day:	9-00 A. M.	Civil government
	10-00 A. M.	Algebra
	2-00 P. M.	Physiology
	3-00 P. M.	Physical geography

Entrance examinations in June will be held on the same days and in the same order as in Amherst, at Jacob Sleeper Hall, Boston University, 12 Somerset Street, Boston; at Horticultural Hall, Worcester, and at Pittsfield. Candidates may be examined and admitted at any other time in the year.

Preliminary examinations in one or more of the required subjects may be taken a year before the candidate expects to enter college, and credit for successful examination in any subject will stand for two years after the examination.

ADMISSION ON CERTIFICATE

Certificates of schools and academies approved by the faculty of the college are accepted in place of examinations. These certificates must be made out on blanks furnished on applica-

tion to the registrar, and must be signed by the principal of the school making such application.

A student admitted on certificate may be dropped from college at any time during freshman year, when his work is not satisfactory; and the privilege implied in the acceptance of a certificate may be revoked whenever, in the judgment of the faculty, the student, either through lack of ability or else of application, fails to attain the standard required.

ADMISSION TO ADVANCED STANDING

Candidates for classes more advanced than the freshman class will be examined in the studies which have been pursued by the class to which they desire admission.

Courses of Instruction

FOR THE DEGREE OF BACHELOR OF SCIENCE

AGRICULTURE

Introductory. Relations of federal and state governments to agriculture, four lectures. History of agriculture, tenure of land, rents, holdings, etc., six lectures.

Freshman year, first semester, three exercises a week in class room and one exercise a week in judging sheep and cattle, required; breeds of farm live stock, sheep, cattle. Lecture syllabus by Cooley, and Curtis' *Horses, Cattle, Sheep and Swine.*

Professor COOLEY

Sophomore year, nine weeks, first semester, three exercises a week in class room and one exercise a week in judging horses and swine, required; horses and swine. Lecture syllabus by Cooley, and Curtis' *Horses, Cattle, Sheep, and Swine.*

Professor COOLEY

Sophomore year, nine weeks, first semester, three hours a week, required; dairying. Lectures on dairy farming, milk production, handling and marketing of milk, milk preservation and modification, and products of milk. Text-book, Wing's *Milk and Its Products.*

Professor COOLEY

Sophomore year, eight weeks, second semester, three hours a week, required; animal breeding. Shaw's *Breeding Animals*, lectures and discussion of principles of breeding.

Professor COOLEY

Thomas Arkle Clark

Sophomore year, ten weeks, second semester, required; soils: formation, classification, composition; physical and chemical characteristics, and their relations to maintenance and increase in productiveness. Brooks' *Agriculture*, Vol. I, supplemented by lectures and laboratory work. Professor Brooks

Junior year, fourteen weeks, first semester, elective; methods of soil improvement, including tillage, drainage, and irrigation. Brooks' *Agriculture*, Vol. I, supplemented by lectures, laboratory work, and practical exercises.

Professor Brooks

Junior year, four weeks, first semester, elective; manures: production, composition, properties, adaptation and use. Brooks' *Agriculture*, Vol. II, supplemented by lectures and practical exercises.

Junior Year, second semester, elective; fertilizers, including a critical study of their production, composition, properties, adaptation and use; and green manuring. Brooks' *Agriculture*, Vol. II, supplemented by lectures, laboratory work and practical exercises. Professor Brooks

Senior year, first semester, elective; silos and ensilage: historical development; the merits and methods of construction of the different kinds of silos; the crops suited for ensilage; ensilage machinery; the methods of filling the silo; and the nature and extent of the changes taking place in ensilage as affecting food value. Lectures, books of reference, and practical exercises. Professor Brooks

Senior year, seven weeks, first semester, five hours a week, elective; feeding animals: principles of digestion and animal nutrition, a study of feeding stuffs (coarse and concentrated). The relation of food to product; compounding rations. Armsby's *Cattle Feeding*, lectures and discussion. Professor Cooley

Senior year, seven weeks, first semester, five hours a week, elective; dairying: selection and management of the dairy farm, dairy cattle, chemical and physical properties of milk, etc., etc., cream, butter, cheese, and by-products.

Professor Cooley

Senior year, first and second semesters, two exercises a week for ten weeks; dairy practice: use of separators, Babcock tester, butter making, etc. Specialists

Senior year, second semester, elective; the crops of the farm and crop rotation: including a study of the origin and agricultural botany of all the leading crops of the farm; annual forage crops, grasses and legumes, cereals, root-crops, vegetables, tobacco, and other special commercial crops. The production and use of each; the varieties and methods of improvement; the adaptation to soil; the special manurial requirements; and the methods of raising and harvesting are considered. Lectures, reference books, and field work.

Professor Brooks

Senior year, second semester, elective; agricultural experimentation: objects, methods, sources of error; interpretation of results. Lectures and study of reports, bulletins, etc.

Professor Brooks

Senior year, second semester, elective; farm management: selection of the farm, its subdivisions and equipment, buildings, fences, roads, water supply; farm capital, permanent, perishable, and floating. The labor of the farm and its management; farm power and farm machinery. Lectures and practical exercises. Professor Brooks

Seminary courses, by arrangement, for advanced students.

Special problems requiring experiment or other research

investigation will be assigned to students fitted for and desiring such work.

Training and practice in the use of farm implements and machines by arrangement when desired.

HORTICULTURE

This department endeavors to give the student a working knowledge of horticulture on its practical and on its scientific side. The attempt is made to inculcate a taste and an enthusiasm for horticultural pursuits, in place of distaste and dislike for the drudgery of farm life. On these things success and further progress chiefly depend.

The courses now offered are as follows, though others will be added as occasion requires.

1. *Sophomore class*, second semester. The fundamental operations of horticulture—propagation, pruning and cultivation—as related to the physiology of the plant. During the first half of this course Bailey's Nursery Book is used as a text.

Mr. DREW

2. *Junior year*, first semester. Pomology. This course covers the three natural divisions of the subject, viz.: (a) systematic pomology, or the study of the fruits themselves, (b) practical pomology, or the practice of fruit growing, (c), commercial pomology, or the principles underlying the marketing of fruits. The course is pursued by means of text book, lectures, laboratory and field exercises.

Professor WAUGH and Mr. DREW

3. *Junior year*, first semester, four periods weekly. Plant breeding. Based on a thorough examination of the laws of heredity and of variation and of the principle theories of evolution. Lectures, accompanied by practice and direct experiments in crossing and hybridizing plants. Professor WAUGH

4. *Junior year*, second semester, four periods weekly. Market gardening, including vegetables and small fruits. Locations, soils, methods of cultivation and marketing. Textbook Bailey's *Principles of Vegetable Gardening*, lectures and field exercises. Mr. Drew

5. Individual problems will be assigned to seniors who elect horticulture. This gives the student an opportunity for specialization in various lines of fruit growing, vegetable culture, greenhouse management, landscape gardening, etc.

Professor Waugh, Mr. Drew and others

A seminar, made up of all students electing advanced work in horticulture or landscape gardening, meets at regular intervals for the discussion of any matters pertaining to the subject. Successful and noted horticulturists from outside the college are frequently present at these meetings to speak on the topics with which they are especially identified.

LANDSCAPE GARDENING

The college wishes to promote the work in landscape gardening in every way possible. The aim of the courses is to give the general student an understanding of the fundamental principles of design and of good taste as applied to gardening; and to prepare advanced students for the practice of landscape gardening in its various branches.

Although a variety of other work along related lines is available, the courses now definitely offered are as follows:

1. *Junior year*, four periods weekly. Materials. This course is designed to give the student an intimate acquaintance with the trees, shrubs and other plants used in landscape gardening. Professor Waugh and assistant

2. *Junior year*, second semester, four hours a week. Elements of landscape design. The fundamental principles under-

lying the artistic development of parks, estates, gardens and other areas, together with some of the simpler applications to practical conditions. During the first half of the term Waugh's *Landscape Gardening* will be used as a text.

Professor WAUGH

3. *Senior year*, first and second semesters, four laboratory periods weekly. Advanced landscape gardening. Lectures, conferences, field exercises, and extensive practice work with criticism. The student is given definite problems to solve, these problems being arranged in such an order as to develop the subject logically in the student's mind.

Professor WAUGH and assistant

CHEMISTRY

This course aims to inculcate accurate observation, logical thinking, systematic and constant industry, together with a comprehensive knowledge of the subject. Instruction is given by textbook, lectures, and a large amount of laboratory work under adequate supervision. The laboratory work at first consists of a study of the properties of elementary matter, analysis of simple combinations, and their artificial preparation. This is followed by a quantitative analysis of salts, minerals, soils, fertilizers, animal and vegetable products. The advanced instruction takes up the chemistry of various manufacturing industries, especially those of agricultural interest, such as the production of sugar, starch, and dairy products; the preparation of animal and plant foods, their digestive assimilation and economic use; the official analysis of fertilizers, fodders and foods; and the analysis of soils, waters, milk, wine, and other animal and vegetable products.

The courses are as follows:

Freshman year, second half of second semester, four hours a week; general chemistry, part 1, principles of chemistry, non-metals. Newth's *Inorganic Chemistry*. Professor HOWARD

Sophomore year, first semester, six hours a week; general chemistry, part 2, metals. Professor HOWARD

Second semester, five hours a week; subject continued, dry analysis. Professor HOWARD and Mr. KNIGHT

Junior year, first semester, eight hours a week; qualitative and quantitative analysis, organic chemistry. Four hours a week; special subject.
Professor WELLINGTON and Mr. KNIGHT

Second semester, ten hours a week; organic chemistry. Remsen's *Organic Chemistry*. Five hours a week; special subject. Professor WELLINGTON

Senior year, (elective), first semester, three hours a week; chemical industries. Professor GOESSMANN

Eight hours per week; quantitative analysis and chemical physics. Reychler-McCrae's *Physical Chemistry*.
Professors HOWARD and WELLINGTON

Second semester, eight hours a week; advanced work with lectures. Professor WELLINGTON

GEOLOGY

This course is divided into two parts: mineralogy and geology.

Junior year, first semester, seven weeks, three hours a week; mineralogy: a course of systematic determinative mineralogy based on Brush's *Manual*. This work is carried on in the laboratory and consists in determing the minerals by a study

of lustre, fusibility, hardness, color, streak, specific gravity, etc., and by some of the simpler chemical tests.

Professor HOWARD

Eleven weeks, three hours a week; geology: dynamical, structural, and historical, based on Scott's *Textbook of Geology*; illustrated by charts and fossils and by field excursions in the Connecticut valley. Professor LULL

ZOÖLOGY

Anatomy and Physiology.—*Freshman year*, one half of the second semester, four hours a week. Martin's *The Human Body* (advanced course) is used as a textbook, from which recitations are assigned, supplemented by lectures and demonstrations illustrated by means of anatomical models and charts.

Professor LULL

Zoölogy, *Sophomore year*, first semester, two exercises of two hours each a week, laboratory and lecture course in general elementary Zoölogy. Parker and Haswell's *Manual of Zoölogy* will be used as a reference book in this course.

Professor LULL

Junior year, (elective for students in the biological course), first semester, four exercises of two hours each a week; second semester, three exercises of two hours each a week.

Professor LULL

POLITICAL SCIENCE

The purpose of the entire course is to fit the student to understand the economic and political movements of his time, so that he may succcessfully solve the problems confronting him.

Economics, *junior year*, second semester, four hours a week.

1. The elements of political economy are taught by means of textbook (this year F. A. Walker's *Political Economy, Briefer Course*) and lectures, the aim being to make the student familiar with the generally accepted facts, definitions, principles and laws of the science; and to train him to criticise theories, scrutinize facts, and weigh arguments. 2. The industrial history of England and of the United States is studied. Gibbins' *Industrial History of England* is used. 3. The following elective courses are offered: economics of agriculture; banks and banking; problems of the currency; trusts, or monopolistic corporations; transportation; socialism. 4. Practical economics. Each member of the class selects for investigation a question, in which he is interested, and devotes two or three months to its solution.

Papers, giving the results of research, prepared by members of the class, are read, and discussed by the students. Each student is asked to explain and defend from criticism the statements and the conclusions made in the paper he presents. The department has at its disposal a working library and a collection of material for the use of students.

Professor WALKER

Constitution of the United States, *senior year*, four hours a week during half of the first semester and the whole of the second semester. 1. Political institutions. By use of textbook (Woodrow Wilson's *The State*) and lectures, the student is led to understand what is the government, municipal, state, and federal, now existing in the United States. This government is compared and contrasted with the governments of England, France, and Germany. Care is taken to familiarize the student with the practical methods of legislation, of nominating conventions, of elections, and of administration. 2. Constitutional history of England and of the United States,

with discussions relating to the origin, nature, scope, and purpose of government. Professor WALKER

Lectures on law, second semester, one hour a week. This course treats of laws relating to business, especially to business connected with rural affairs, citizenship, domestic relations, farming contracts, riparian rights, real estate, and common forms of conveyance Practical work is required such as may fit one to perform the duties of a justice of the peace.

Mr. LYMAN

ENGLISH

This department aims to secure: (a) ability to give oral and written expression of thought in correct, effective English; (b) acquaintance with the masterpieces of American and English literature; (c) ability to present, logically and forcibly, oral and written arguments on propositions assigned for debate.

The following courses are offered: under (a) rhetoric and oratory; under (b) American literature and English literature; under (c) argumentation. The elective course in senior year is in language and literature.

1. Rhetoric. This course extends through the two semesters of freshman year, and through the second semester of sophomore year. In the first semester of freshman year, work is confined to essay writing and to personal criticism, by the instructor, of the students' compositions. This criticism is offered at stated intervals to each student individually, according to a posted schedule of appointments. At the beginning of the semester a printed pamphlet is furnished each student, containing necessary information with regard to the preparation of essays. In the second semester of freshman year, the study of literary types is undertaken in the form of class-room

work in prose composition, including exposition, persuasion, narration, description, and in prose diction, including usage and style. Special attention is given to the training of the inventive ability of the student. The textbook used is Baldwin's *College Manual of Rhetoric.* In the second semester of sophomore year, individual work in essay writing is again taken up, largely based upon the previous work of the class in American literature. (See 3 below.) Here also personal criticism is offered. Professor BABSON

2. Oratory. Individual drill in declamation, first in private and then before the class, is given during the second semester of freshman year. The choice of speakers for the Burnham prizes is based upon this work. In the junior year, during the first semester, at least two orations, upon subjects assigned or chosen, are written, and delivered before the class. Every oration is criticised by the instructor before it is committed to memory by the student. The choice of speakers for the Flint prizes in oratory is based upon this work. Professor BABSON

3. Literature. American literature is studied in the first semester of sophomore year, three hours a week. The course comprises, first, the careful study of a textbook, (Newcomer's *American Literature*), together with recitations based upon same; secondly, the taking of notes from lectures, dwelling upon topics not fully treated in the textbook; and thirdly, the reading outside of the class room of assigned selections from the prose and poetical works of standard American authors.
Professor BABSON

The history of English Literature is studied during the second semester of sophomore year, four hours a week. The work is based upon a textbook, this year Halleck's *History of English Literature.* The topical method is followed in recita-

tion, and instead of formal lectures, there are discussions of points requiring a fuller development than the textbook gives. Collateral readings of literature are required. Frequent written tests are given in which particular attention is given to (a) the definition of words used in the textbook; (b) the use of English in the development of the topics unfolded in the textbook or discussed in the class room. Professor Mills

4. Argumentation. Four hours a week during the first semester of junior year are given to written and oral argumentation. The course is outlined as follows: (a) principles of argumentation as laid down in a textbook or by lecture; (b) briefs and brief making; (c) briefs developed into forensics and submitted for personal criticism; (d) debates.

Professor Mills

Senior elective course, two semesters, four hours a week. The work in this course is upon the following subjects: (a) English language, its origin, history, and development, with particular attention to the study of words as outlined in Anderson's *A Study of English Words*; (b) English literature, principally of the eighteenth and nineteenth centuries.

Professor Mills

VETERINARY SCIENCE

The course of instruction in veterinary science has been arranged to meet the demands of the students, who, after graduation, purpose following some line of work in practical agriculture. Particular stress is laid upon matters relating to the prevention of disease in animals. In addition, the interests of prospective students of human and comparative medicine have been taken into account in the arrangement of the course of

study. The subject is taught by lectures, laboratory exercises, demonstration, and clinics.

Senior year, (elective), first semester, four hours a week; veterinary hygiene, comparative (veterinary) anatomy, general pathology. Professor PAIGE

Second semester, four hours a week; veterinary materia medica and therapeutics; theory and practice of veterinary medicines; general, special, and operative surgery; veterinary bacteriology and parasitology; medical and surgical clinics. Professor PAIGE

The instruction in bacteriology is given by means of lectures, recitations and laboratory exercises. The object of this course of study is to acquaint the student with the various organisms found in air, water, soil, milk, and the body, and their relation to such processes as decomposition, fermentation, digestion, and production of disease. The toxic substances resulting from the growth of organisms are considered, as well as the antitoxines used to counteract their action.

Senior year, half of the first semester, four exercises of two hours each a week. Required. Professor PAIGE

BOTANY

The object of this course is to teach those subjects which have a bearing upon economic and scientific agriculture. The undergraduate work extends through six semesters. The first two semesters are required. An outline of the course follows:

Freshman year, first semester, five hours a week; laboratory work and lectures. Histology and physiology of the higher plants. Professor SMITH

Freshman year, second semester, one laboratory exercise of

two hours and one recitation hour a week; laboratory work, lectures, and textbook. Outlines of classification and morphology of the higher plants. Gray's *Manual of Botany*.

Professor SMITH

Junior year, first semester two laboratory exercises of two hours and one recitation hour a week; laboratory work and lectures. Crypto-gamic botany. Professor STONE or SMITH

Junior year, second semester, two laboratory exercises of two hours and one recitation hour a week; laboratory work and lectures. Elements of vegetable pathology and physiology.

Professor STONE or SMITH

Senior year, (elective), both semesters, four laboratory exercises of two hours a week; laboratory work, and lectures. (a) Plant physiology. (b) Plant pathology. Either course is optional. Professor STONE

MATHEMATICS, PHYSICS, AND ENGINEERING

This department has charge of the instruction in mathematics, physics, civil engineering, and drawing. The aim is to secure thorough work in the fundamental principles and train the mind in clear and logical thinking. The application of the subjects to practical problems is given special attention. The work of the department extends over the four years as outlined below.

MATHEMATICS

Freshman year, first semester, five hours a week; higher algebra, including ratio and proportion, progressive binominal theorem, series undetermined coefficients, logarithms, continued fractions, permutations. Wells' *College Algebra*.

Professor HASBROUCK and Mr. WEST

Second semester, two hours a week; solid geometry. Wells' *Solid Geometry.* Mr. West

Plane trigonometry, two hours a week. Phillips and Strong's *Elements of Trigonometry.* Professor Hasbrouck

Junior year, for mathematical and chemical students, first semester, four hours a week; analytic geometry of the line, circle, conic sections and higher plane curves. Wentworth or Bowser's *Analytic Geometry.* Professor Ostrander

Second semester, four hours a week; differential and integral calculus. Osborne's *Calculus.* Professor Ostrander

PHYSICS

Sophomore year, first semester, four hours a week; elementary mechanics of solids, liquids and gases, heat, and sound. Dana's *Elementary Mechanics*, Carhart's *University Physics.* Professor Hasbrouck

Second semester, four hours a week; electricity, magnetism, and light. Carhart's *University Physics.* Professor Hasbrouck

Senior year, elective for those stndents who have taken junior mathematics; first semester, four hours a week; analytic mechanics. Peck's *Analytic Mechanics.* Professor Hasbrouck

Second semester, four hours a week; laboratory work. Professor Hasbrouck

CIVIL ENGINEERING AND SURVEYING

Sophomore year, second semester, two exercises of two hours a week. Plain surveying with field work, including the use of the usual surveying instruments. *Surveying Manual*, Penn and Ketchum. Professor Ostrander

Instruction in Civil Engineering will be given in two distinct courses of one year each, the courses alternating. They will be open to students of the junior and senior classes as indicated below. The course of 1903-4 will be required of juniors and seniors taking the courses in mathematics and landscape gardening.

First semester, three hours recitation or lectures and two hours field work or draughting a week; topographic and higher surveying, highway construction and the measurement of earth work pavements and railroad construction. Textbook and lectures. Professor OSTRANDER

Second semester, four hours a week; strength of materials, foundations and masonry construction. Textbook and lectures. Professor OSTRANDER

The course for 1904-5 will be for students in mathematics only. First semester, three hours recitation and two hours draughting a week; stresses in roofs, bridges and graphic statics. Merriman and Jacoby's *Roofs and Bridges*, Parts I and II. Professor OSTRANDER

Second semester, four hours a week; hydraulics and sanitary engineering. Merriman's *Hydraulics and lectures*. Professor OSTRANDER

DRAWING

Junior year, first semester, two two-hour sessions a week for students in mathematics and landscape gardening free hand drawing. Mr. WEST

Second semester, two two-hour sessions a week, mechanical and topographic drawing. Mr. WEST

ENTOMOLOGY

The importance of a knowledge of insects in every department of life is recognized by placing an introductory course in this subject as a required study in the junior elective courses—(1) agriculture, (2) horticulture, (3) biology, (4) landscape gardening. For those who desire a further knowledge of it, because of its importance to their future occupations, a senior elective is offered, so shaped as to be of especial value for those who expect to take up agriculture, horticulture, landscape gardening, forestry, or science teaching, as life occupations.

Junior year, second semester, four exercises a week, of two hours each; lectures, laboratory, and field work: general consideration of insect structure and life histories; systematic study of the groups of insects with particular reference to those of economic importance; methods for preventing or checking their ravages; insecticides and apparatus for their use; the collecting, mounting, and naming of insects, and examination of the work of insects in the field and laboratory.

Professor H. T. Fernald

Senior year, (elective), first and second semesters, four laboratory exercises of two hours each a week; lectures, laboratory and field work: advanced morphology of insects; economic entomology; training in the determination of insects; use of literature on entomology; study of life histories; value and application of insecticides; thesis on insects most closely related to future occupation of the student.

Professors C. H. Fernald and H. T. Fernald

MODERN LANGUAGES

French.—Course I. Requires for the two semesters of the freshman year, four hours a week, first semester; four hours a

week, second semester. The aim of this course is to enable the student to read modern French fluently, especially that found in scientific journals and treatises. The first ten weeks are devoted to gaining a thorough mastery of the accent and such principles of grammar and syntax as are covered by the first half of Whitney's *French Grammar*. Great stress is laid upon the acquisition of a correct accent, a good vocabulary and a thorough comprehension of the main idiomatic difficulties of the language. This course is further strengthened by constant drill in pronunciation, exercises, and composition.

Mr. Herrick

Course II. Elective for both semesters of the senior year, four hours a week. The aim of this course is to equip the student with a general knowledge of classical literature, and a working knowledge of the language as it is spoken and written in the French capital to-day. Drill is furnished in composition, principles of syntax, and sight translation. Students electing Course II must have a good record in Course I or must pass a satisfactory examination therein. Mr Herrick

German.—Course I. Required for both semesters of sophomore year, four hours a week first semester; three hours a week second semester. Facility in translation is the main object in view, with particular reference to scientific writings. The work consists of a study of the rudiments of grammar and of translation. Professor Smith

Course II. Elective for both semesters of senior year, four hours a week. In this course special attention is given to the reading of German literature, particularly the literature pertaining to several branches of natural science. A student taking this course in connection with any science is expected to gain the ability to avail himself of the German literature of his subject, within reasonable limits.

Different books are used from year to year, but the following list will give an idea of the nature of the work :

Course I. Joynes Meissner's *German Grammar*, Guerber's *Märchen und Erzählungen*, Hauff's *Das Kalte Herz*, Moser's *Der Bibliothekar*.

Course II. Lessing's *Emilia Galotti*, and *Minna von Barnhelm*, Hodge's Courses in *Scientific Reading*.

Students electing Course II must have a good record in Course I, or must pass a satisfactory examination therein.

Professor Smith

MILITARY SCIENCE

In compliance with the provisions of an act of Congress, of July 2, 1862, military instruction under a regular army officer, detailed for this purpose, is required of all able-bodied male students.

The object of such instruction is clearly to disseminate the elements of military knowledge throughout the country, that, in case of sudden emergency, a sufficient number of well trained, educated men may be found to command and properly to instruct volunteer troops. Military drill also has the object in view of giving the student physical exercise, teaching respect and obedience to those in authority, without detracting from pride of manhood, and developing a military bearing and courtesy becoming in a citizen as in a soldier.

Course I. Out of doors, an exercise of one hour, four times a week, Mondays, Tuesdays, Thursdays and Fridays: infantry drill by squad, company, and battalion; guard mounting, dress parade, inspection, and review; artillery drill by detachment; target practice.

All drills are in the drill hall during the winter months and inclement weather.

Students assigned to the college band are given instruction and practice in band music and band evolutions, in place of drills and recitations.

Course II. Theoretical instruction for freshmen, one hour a week for both semesters, comprises recitations in infantry drill regulations. *United States Service Manual.*

Course III. Theoretical instruction for seniors for both semesters, one hour a week, embraces drill and army regulations; duties of sentinels and guard duty; elements of military science; preparation of necessary reports and returns pertaining to a company of infantry; and a thesis on some military subject. Wagner's *Elements of Military Science.*

Professor ANDERSON

SYNOPSIS OF THE COURSES OF INSTRUCTION

The figures indicate the number of exercises a week: light faced type, recitation periods of one hour each; heavy faced type, laboratory periods of two hours each.

FRESHMAN YEAR

First Semester

Language	English	3
	French	4
Mathematics	Algebra	5
Science	Agriculture	4
	Botany **2+1**	3
Military	Tactics	1
History		2
		—22

Second Semester

Language	English	4
	French	4
Mathematics	Geometry and trigonometry,	4
Science	Anatomy and physiology half semester	4
	Chemistry half semester	
	Botany 1+1	2
History		2
		—20

SOPHOMORE YEAR

First Semester

Language	English	4
	German	4
Physics		4
Science	Agriculture	4
	Chemistry	3
	Zoölogy	2
		—21

Second Semester

Language	English	4
	German	3
Physics		4
Surveying		2
Science	Agriculture	3
	Chemistry	2½
	Horticulture	3
		—21½

JUNIOR YEAR

First Semester

Course in Agriculture	Agriculture	4
	Botany 2+1	3
	Chemistry	3
	Geology	3
	Horticulture	3
	English	4
		—20

Course in Horticulture	Horticulture	4
	Horticulture 1+3	4
	Botany 2+1	3
	Chemistry	**3**
	Geology	3
	English	4
		—21
Course in Biology	Zoölogy	**4**
	Botany 2+1	3
	Chemistry	**3**
	Geology	3
	Horticulture	3
	English	4
		—20
Course on Chemistry	Chemistry	**4**
	Agriculture	4
	Mathematics	4
	Geology	3
	English	4
	Special subject	**2**
		—21
Course in Mathematics	Analytical geometry	4
	Engineering 1+3	4
	Free hand drawing	2
	Landscape gardening	4
	Geology	3
	English	4
		—21
Course in Landscape Gardening	Landscape gardening	4
	Agriculture	3
	Botany 2+1	3
	Free hand drawing	2
	Horticulture	3
	Geology	3
	English	4
		—22

Second Semester

Course in Agriculture	Agriculture	3
	Botany 2+1	3
	Chemistry	**4**
	Horticulture	**2**
	Entomology	**4**
	Economics	4
		—20

Course in Horticulture	Horticulture	4
	Botany 2+1	3
	Chemistry	4
	Landscape gardening	2
	Entomology	4
	Economics	4
		—21
Course in Biology	Entomology	4
	Zoölogy	3
	Botany 2+1	3
	Chemistry	4
	Horticulture	2
	Economics	4
		—20
Course in Chemistry	Chemistry	5
	Agriculture	3
	Mathematics	4
	Economics	4
	Special subject	5
		—21
Course in Mathematics	Engineering	5
	Mathematics	4
	Mechanical drawing	2
	Landscape gardening	4
	Economics	4
		—19
Course in Landscape Gardening	Landscape gardening	4
	Botany, 2+1	3
	Mechanical drawing	2
	Engineering	5
	Entomology	4
	Economics	4
		—22

Senior Year

First Semester

The following subjects are required in all courses:

Bacteriology, half semester 4 Constitution of the United States, half semester 4	4
Military science	1
	—5

Second Semester

Constitution of the United States	4
Military science	1
	—5

From the following the student must elect three courses, closely correlated with his junior year course. Only one course in language can be elected.

Agriculture	4	Entomology	4	English	4
Horticulture	4	Chemistry	4	French	4
Veterinary	4	Physics	4	German	4
Botany	4	Engineering	4	Latin	4
Landscape gardening	4				

Courses of Instruction

FOR THE DEGREES OF MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY

Applicants are not eligible to the degree of Master of Science or of Doctor of Philosophy until they have received the degree of Bachelor of Science or its equivalent.

Courses for the degree of Master of Science

A course of study is offered in each of the following subjects: mathematics and physics, chemistry, agriculture, botany, horticulture, entomology, veterinary science. Upon the satisfactory completion of any two of these the applicant receives the degree of Master of Science.

Candidates for the degree of Master of Science must devote not less than one year and a half after graduation to the prosecution of two studies for the degree, one year of which must be in residence at the Massachusetts Agricultural College.

Courses for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy is conferred upon candidates who shall have spent three years in this institution and satisfactorily completed a major subject and two minor subjects. Botany, chemistry, entomology or horticulture may be selected as the major. The minors available are botany, chemistry, entomology, horticulture, and zoölogy.

At least three years is necessary to complete the work required: twenty hours per week to be devoted to the major subject, and from twelve to sixteen to be given to each minor during one and a half years.

A general outline of the work assigned for the major study in each subject is as follows :

Botany. Vegetable physiology, vegetable pathology, mycology, œcology, taxonomy, phylogeny, the history of botany and the history and theory of evolution. A thesis dealing with some economic problem in plant physiology or pathology, or both, and containing a distinct contribution to knowledge will also be required.

Chemistry. Advanced work in the following subjects: inorganic analysis, qualitative, of the rarer elements, and quantitative; crystallography; physical chemistry; descriptive and determinative mineralogy; chemical geology; soil formation; soil physics and chemistry; gas analysis; synthetic inorganic work; chemical theory and history; general organic chemistry; special topics in organic chemistry; elementary quantitative organic analysis; proximate qualitative and quantitative organic analysis, including determination of organic radicles; organic synthesis of aliphatic and aromatic compounds; problems in chemical manufacture; recent chemistry of plant nutrition; animal physiological and pathological chemistry, including foods, standards for feeding of all kinds, and among secretions, milk and milk industries, and among excretions, urine and urinalysis; toxicology; insecticides and fungicides; frequent examinations on current chemical literature.

Early in the course original work on some agricultural, chemical subject must be begun. The history and results of this work must be submitted before graduation in the form of a thesis containing a distinct contribution to knowledge.

Entomology. *General morphology of insects:* embryology; life history and transformations; histology; phylogeny and relation to other anthropods; hermaphroditism; hybrids; parthenogenesis; paedogenesis; heterogamy; chemistry of colors in

insects ; luminosity ; deformities of insects ; variation ; duration of life.

Œcology : dimorphism ; polymorphism ; warning coloration ; mimicry ; insect architecture ; fertilization of plants by insects ; instincts of insects ; insect products of value to man ; geographical distribution in the different faunal regions ; methods of distribution ; insect migrations ; geological history of insects ; insects as disseminators of disease ; enemies of insects, vegetable and animal, including parasitism.

Economic entomology : general principles ; insecticides ; apparatus ; special cases ; photography of insects and their work ; methods of drawing for illustrations ; field work on insects and study of life histories ; insect legislation.

Systematic entomology : history of entomology, including classifications and the principles of classifications ; laws governing nomenclature ; literature,—how to find and use it ; indexing literature ; number of insects in collections and in existence (estimated); lives of prominent entomologists ; methods of collecting, preparing, preserving, and shipping insects ; important collections of insects.

Journal club : assignments of the literature on the different groups of insects to different students who report at monthly meetings summaries of all articles of value which have appeared during the month.

Required readings of the best articles on the various topics named above and on the different orders of insects. This reading covers from 15,000 to 20,000 pages in English, French, and German, and the candidate is examined on this together with his other work at the close of his course.

Thesis : A thesis with drawings, which shall consist of the results of original investigation along one or several lines, and which shall constitute a distinct contribution to knowledge,

must be completed and accepted before the final examinations are taken.

Horticulture. The work in horticulture necessarily varies considerably with different candidates, since its most important features are specialization, original investigation, and the development of individual initiative in dealing with new questions. Each candidate must select some special field of horticultural study, and devote himself continuously to it. He will be required to attend lectures, conferences, and seminars, dealing with horticulture in its broader aspects. Advanced work will be required in the following subjects: systematic pomology, pomological practice; commercial practice; systematic, practical, and commercial olericulture; greenhouse plants and problems; floriculture; landscape gardening; plant breeding and general evolution; and questions of a physiological nature connected with propagation and pruning.

Other requirements and opportunities are (1) periodical semnars with special lectures, by prominent men from outside the college; (2) extensive and systematically planned readings; (3) frequent visits to orchards, gardens, greenhouses, estates, and libraries outside the college grounds, always with some definite purpose in view; (4) and finally, the preparation and publication of a thesis setting forth the results of the candidate's major study, which shall be an original and positive contribution to horticultural knowledge.

Courses of Instruction

FOR SPECIAL STUDENTS

A TWO YEARS' COURSE FOR WOMEN

Women are received who wish to pursue the studies named below. There is no charge for tuition. Board may be obtained in the Dining Hall and also rooms, so far as the accommodations will permit.

First year, first semester: soils, fertilizers and cultivation, four hours a week; elementary botany, five hours; French, four hours; free hand drawing, four hours.

Second semester: propagation and pruning (horticulture, one hour) three hours; botany: morphology, plant analysis, five hours; chemistry, descriptive, five hours; vegetable gardening, four hours; French, four hours.

Second year, first semester: pomology, three hours a week; greenhouse construction and management, three hours; botany: structure and physiology of plants, five hours; zoölogy, two hours; chemistry, five hours; German, four hours.

Second semester: landscape gardening, three hours a week; floriculture, four hours; vegetable pathology, five hours; entomology, three hours; chemistry, five hours; German, three hours.

A SHORT WINTER COURSE IN DAIRY FARMING

This course is open to persons of both sexes. Applicants must be at least sixteen years of age, and must furnish papers certifying good moral character. No entrance examination is required. Tuition is free to citizens of the United States. The same privileges in regard

to room and board obtain as with other students. Attendance upon chapel is required. The usual fees are charged for apparatus and material used in laboratories. Attendance upon military drill is not expected.

	Hours a week.
Soils, tillage, and methods of soil improvement: manures and fertilizers and their use; crops and rotations	4
Breeds and breeding of dairy stock; judging to scale of points	2
Fodders and feeding farm live stock	1
Stable construction and sanitation	1
Common diseases of stock; prevention and treatment	1
Dairy products, their general characteristics, testing	2
Chemical composition of milk and of special milk products	1
Botany	2
Horticulture	3
Entomology	3
Dairy practice, including testing, use of separators, buttermaking, preparation of certified and modified milk and pasteurization	4
Practice in horticulture	1

Begins first Thursday in January and continues ten weeks.

A SHORT COURSE IN BEE CULTURE

This course begins the fourth Wednesday in May and continues two weeks.

	Total hours.
The structure of bees, with special reference to their work Professor H. T. FERNALD	5
Flowers and fruits in their relations to bees Professor STONE	10
Honey crops and how to grow them Professor BROOKS	5
Bees and bee keepers' supplies Professor PAIGE	10
Work in the apiary, under direction of an expert	20
Instruction by specialists	4

Course in Horticulture also offered

Equipment of the Several Departments

AGRICULTURE

The part of the college estate, assigned to the department of agriculture contains 160 acres of improved land, 40 acres of pasture, and 16 acres of woodland. The latest inventions in improved agricultural tools and machinery are in practical use. The large and commodious barn and stables are stocked with the best breeds of horses, cattle, sheep, and swine. Attached to the barn is a dairy building equipped with the latest machinery driven by an electric motor. The museum contains a collection of implements, seeds, plants, and models of animals, all of which are designed to illustrate the evolution of agriculture. Three large lecture rooms, one in South College, and two in the dairy building have been assigned to this department.

HORTICULTURE AND LANDSCAPE GARDENING

For illustration of the science and the practice of horticulture, the department possesses about 100 acres devoted to orchards, planted with the leading old and new varieties of apples, pears, peaches, plums, cherries, quinces, chestnuts, hickory-nuts, and walnuts; vineyards containing nearly 200 named varieties of grapes, besides many seedlings, and about an acre devoted to a commercial crop of a few market varieties; nurseries containing many kinds of fruit and ornamental trees, shrubs, and plants, in all stages of growth, from the seed and cuttings to those ready for planting out; and small fruit plantations of considerable diversity and extent. Several acres of excellent garden land are devoted to the growing of all the common types of vegetables. All these plantations, as far as

possible, are managed according to the best practical and commercial methods, so that students may learn to know not merely the plants themselves but the best methods of handling them at a profit.

There are large well stocked glass houses to illustrate the principles of greenhouse construction and management. These houses contain a large collection of the economic plants of the world; and also small commercial supplies of those plants such as carnations, roses, and chrysanthemums, commonly grown for market. Vegetable growing under glass is practiced to an extent necessary for purposes of illustration.

A fine arboretum of trees and shrubs, native and exotic, furnishes material for the study of students in landscape gardening. Gardens of hardy and tender plants are being continually extended. Actual work in practical landscape gardening, laying drives and walks, planning and planting various areas, is constantly in progress on the college campus.

CHEMISTRY

This department has fourteen rooms well adapted to their special uses. They are supplied with a large assortment of appartus and chemical materials. The lecture room on the second floor has a seating capacity for seventy students. Immediately adjoining it are four smaller rooms used for storing apparatus and preparing materials for the lecture table. The laboratory for beginners is a large room on the first floor furnished with forty working tables. Each table is provided with reagents and apparatus for independent work. A well filled laboratory for advanced work is also provided on the first floor. A weighing room has six balances and improved apparatus for determining densities of solids, liquids, and gases. The apparatus includes, besides balances, a microscope, a spectroscope,

a polariscope, a photometer, a barometer, and numerous models and sets of apparatus. The various rooms are furnished with an extensive collection of industrial charts. A valuable and growing collection of specimens and samples, fitted to illustrate different subjects taught, is also provided. This includes rocks minerals, soils, raw and manufactured fertilizers, foods, including milk products, fibres, and other vegetable and animal products, and artificial preparations of mineral and organic compounds. Series of preparations are used for illustrating the various stages of different manufactures from raw materials to finished product.

GEOLOGY

Geological teaching is illustrated by a very complete series of minerals, the state collection of rocks of Massachusetts, a series of Ward's fossils and casts of fossils, models, and charts.

ZOÖLOGY

Zoölogical laboratory.—A large, well lighted room, situated in the chemical laboratory, is fitted with necessary tables, trays, and general apparatus, microscopes, dissecting instruments, hand-lenses, and the like. There have lately been added aquaria, in which, as far as possible, the various types studied may be seen in their natural environment. A reference library is kept in the laboratory.

Zoölogical lecture room.—An ample lecture room is situated in South College, adjacent to the museum. It is supplied with a set of Leuckart charts and many special ones as well, and with a complete set of Auzoux models illustrative both of human and comparative anatomy. A special set of typical specimens are being set apart for class illustration, although the more extensive museum collection is drawn upon for the same purpose.

Museum of zoölogy.—The museum is mainly for the purpose of exhibiting those forms treated of in the lecture and laboratory courses, but, in addition to this, the aim has been to show as fully as possible the fauna of the Commonwealth and those types which show the evolution and the relationship of the members of the animal kingdom. The total number of specimens contained in the museum now exceeds eleven thousand. The museum is open to the public from 3-30 to 5-30 P. M., each week day.

Entomological laboratory.—The equipment for work in entomology during the senior year and for graduate students is unusually good. The laboratory building contains a large room for laboratory work, provided with tables, dissecting and compound microscopes, microtomes, reagents, and glass ware. One portion of the building is fitted up as a lecture room. Another room is devoted to library purposes, and contains a card-catalogue of over forty thousand cards, devoted to the liter ature of insects. In addition to a well selected list of entomological works in this room, the college library has an unusual number of rare and valuable books on this subject. This is supplemented by the private entomological library of the professor in charge, which contains over twenty-five hundred volumes, many of which cannot be found elsewhere in the United States. In another room is a large and growing collection of insects, both adult and in the early stages, which is of much assistance to the students. As the laboratory is directly connected with the insectary of the Hatch Experiment Station, the facilities of the latter are directly available. The apparatus room of the insectary, with its samples of spray pumps, nozzles, and other articles for the practical treatment of insects; the chemical room, fitted up for the analysis of insecticides, and other chemico-entomological work; and a greenhouse, where

plants infested by injurious insects are under continual observation, and experimental treatment,—all these are available to the student. In addition, several private laboratory rooms and a photographing room with an unusually good equipment of cameras are provided. The large greenhouses, grounds, gardens, and orchards of the college are also to be mentioned under this head, providing, as they do, for study a wide range of subjects relating to the attacks of injurious insects under natural conditions.

VETERINARY SCIENCE

The department has for its sole use a commodious and modern laboratory and hospital stable erected in 1899. Both buildings are constructed according to the latest ideas as regards sanitation. Every precaution has been taken in the arrangement of details to prevent the spread of disease and to provide for effective heating, lighting, ventilation, and disinfection.

The laboratory building contains a large working laboratory for student use, and several small private laboratories for special work. In addition there are a lecture hall, museum, demonstration room; photographing room, and work shop. The hospital stable contains a pharmacy, operating hall, post-mortem and disinfecting room, besides a section for poultry, one for cats and dogs, and six sections separated from each other, for the accommodation of horses, cattle, sheep, swine, and other domestic animals.

The laboratory equipment consists of a dissecting Auzoux model of the horse, Auzoux models of the foot and the legs, showing the anatomy and the diseases of every part. There are skeletons of the horse, cow, sheep, dog, and pig, and in addition a growing collection of anatomical and pathological specimens. The lecture room is provided with numerous maps,

charts, and diagrams, which are made use of in connection with lectures and demonstrations.

The laboratories are supplied with the most modern, high power microscopes, microtomes, incubators, sterilizers, for the use of students taking the work in bacteriology and parasitology.

BOTANY

The botanical department possesses a general laboratory furnished with tables and benches for microscopical and physiological work and with a dark closet for photographic purposes. There are forty-six compound microscopes, thirty dissecting microscopes, a micro-photographic and landscape camera, and various accessories; also microtomes, paraffine baths, etc., for histological work; a large and useful collection of physiological apparatus for the study of photo-synthesis, respiration, metabolism, transpiration, heliotropism, and other irritable phenomena connected with plants; a set of apparatus for the study of the mechanical constituents of the soil, and for experimental work in soil physics; a large and unique outfit of electrical appliances for the study of all phenomena related to electricity and plant-growth; various devices for the study of mechanics of plant structure; several types of self-registering auxanometers used to measure the rate of growth of plants; self-registering thermometers, and hygrometers for recording constant changes in conditions.

Botanical lecture room.—The botanical lecture room adjoining the laboratory is adapted for general work in morphology and flower analysis with opportunity to use dissecting microscopes.

Botanical museum.—Directly over the botanical lecture room is a museum. It contains a collection of valuable material now undergoing rearrangement and enlargement. There is a collection of spraying solutions; an economic collection of

seeds, the principal Massachusetts timber trees, with photographs and sections of the same, and many cases of interesting examples of natural and artificial grafts, girdlings, etc.

Connected with the museum is a herbarium containing about 15,000 species of flowering plants and ferns, 1,200 species of mosses, 1,200 species of lichens and liverworts, and 12,000 species of fungi, the latter collection being housed in the vegetable pathology building at the experiment station.

Adjacent to the botanical laboratory and lecture room are named collections of native and exotic trees. The various conservatories of the college and the experiment station representing over 13,000 square feet of ground surface devoted to the cultivation of a large variety of exotic plants are also available.

MATHEMATICS, PHYSICS, AND ENGINEERING

SURVEYING

The department possesses a considerable number of the usual surveying instruments with the use of which the students are required to become familiar by performing a required amount of field work. Among the larger instruments are two plain compasses, railroad compass with telescope, surveyor's transit, two engineer's transits with vertical arc and level, solar compass, omnimeter with verniers reading to ten seconds, adapted to geodetic work, Queen plane table, two wye levels, dumpy level, builder's level, sextant, hand level, and a large assortment of leveling rods, flag poles, chains, tapes, etc. For draughting, a vernier protractor, pantograph, parallel rule, etc., are available.

PHYSICS

Among the apparatus in use for general instruction in general physical processes may be found a set of United States standard weights and measures, precision balances, spherome-

ter, vernier calipers, etc.; in mechanics, apparatus to illustrate the laws of falling bodies, systems of pulleys and levers, motion on an incline plane, and the phenomena connected with the mechanics of liquids and gases. The usual apparatus for lecture illustration in heat, light, and sound are also in the possession of the department. In electricity, the equipment consists of apparatus for both lecture illustration and laboratory work, among which may be enumerated a full set of Weston ammeters, and volt meters, a Carhart-Clark standard cell, Mascart quadrant electrometer, Siemens electro-dynamometer as well as self reflecting galvanometers and Wheatstone bridges for ordinary determinations of currents and resistance.

MILITARY SCIENCE

In addition to a large campus, suitable for battalion drill, the military department possesses a special building in which there is a drill room 60 by 135 feet, an armory, a military recitation room, an office for the commandant, and a field-gun and gallery practice room. The building also has a large bathroom immediately adjoining the armory.

In a plot of ground north of the college buildings there is a rifle range, marked for practice at distances of 100 and 200 yards. The range is furnished with a revolving target suitably protected by earthworks. The national government supplies, for the use of the department, arms and equipments: the Springfield cadet rifle and two breech-loading rifled steel guns, calibre 3.2, with complete equipments and ammunition.

The State supplies instruments for the college band.

Students are held responsible for all articles of public property while in their possession.

THE CHAPEL-LIBRARY BUILDING

One of the most attractive and commodious buildings belonging to the college is the chapel-library. It has a commanding position, approximately in the center of the group of buildings adjoining the campus. The chapel occupies the entire second story. A large room, capable of seating about four hundred, is used for daily prayers, Sunday services, the various commencement exercises, and not infrequently for lectures or social gatherings. The room has an excellent pipe organ. Two adjoining rooms are used for small religious gatherings, and meetings of the class teachers and the faculty. The rooms can be thrown open so as to become a part of the main audience hall.

The entire lower story is given over to the library. This library is available for reference or investigation, and is open daily, except on Sundays, from 8 A.M. to 5 P.M. and from 6-30 to 8-30 P. M. It is open on Sundays from 10 A. M. to 1 P. M. The volumes at present number 23,804. The library contains carefully selected books in the departments of agriculture, horticulture, botany, entomology, and of other natural sciences. Sociology, economics, history, literature, the fine arts, and the useful arts are well represented. Constant additions will be made to secure the latest and best works in the several departments of learning.

DINING HALL

A colonial dining hall, built of brick and equipped with all modern conveniences, was completed and opened February, 1903, for the accommodation of students. A committee composed of two members of the faculty, two members of the student body, and the steward, manages the affairs of the dining hall.

The hall contains a number of suites of rooms which may be secured for occupancy by young women attending any of the departments of the college.

THE HEATING, LIGHTING, AND POWER PLANT

This plant is located in the ravine near the chemical laboratory. It is equipped with two large boilers, an engine, and an electric generator. Here steam is generated which heats the college buildings on the west side of the public highway, extending from the dining hall to veterinary laboratory. Here also is produced the electricity which lights all the buildings and the the grounds of the college. Electric power is also generated which is used to drive the machinery in the dairy and in the barn. Connected with the plant is a machine shop in which much work is done for the college. This plant affords opportunity for students in mechanical and electrical engineering to observe the modern utilization of steam and of electricity.

General Information

DORMITORIES

Students are expected to occupy rooms in the college dormitories unless excused to room elsewhere.

In North College and South College rooms, unfurnished, are arranged in suites of three. Each apartment consists of one study room and two bedrooms. In North College the corner rooms are 14 by 15 feet, and the annexed bedrooms 8 by 10 feet. The inside study rooms are $13\frac{1}{2}$ by $14\frac{1}{2}$ feet, and the bedrooms 8 by 8 feet. In South College the study rooms are 14 by 15 feet with a recess $7\frac{1}{3}$ by 3 feet, and the bedrooms $11\frac{1}{6}$ by $8\frac{5}{12}$ feet. Both buildings are heated by steam and lighted by electricity.

Students are required to care for their rooms. Military inspection by the commandant takes place every Saturday morning at 8-30 o'clock.

Rent varies according to the building and the location from $15 to $45 a year. Steam heat costs $13 yearly. Lights cost $12 yearly.

Correspondence relative to the engaging of rooms should be addressed to Thomas Canavan, the janitor.

EXPENSES

Room rent, in advance .	$15	$45
Board, $3.25 to $4 per week .	117	144
Fuel	13	13
Washing, 30 to 60 cents a week	11	22
Military suit . . .	12.50	20
Lights	12	12
	$180.50	$256

In addition to the above expenses, $80 tuition is charged to foreigners.

The military suit must be obtained immediately upon entering college, and used in the drill exercises prescribed. The following fees are charged for the maintenance of the several laboratories : chemical, $15 per semester used ; zoological, $4 per semester used ; botanical, $2 per semester used by sophomore class ; $3 per semester used by senior class ; entomological, $3 per semester used. Some expense is also incurred for text-books.

THE LABOR FUND

An annual appropriation of $5000 is received from the State. The object of this fund is to assist those students who are residents of Massachusetts and are dependent either wholly or in part on their own exertions, by furnishing them work in the several departments of the college. The greatest opportunity for such work is found in the agricultural, and the horticultural department.

Application for participation in the benefits of the labor fund should be made to the president of the college. Students desiring to avail themselves of its benefits must bring a certificate signed by one of the selectmen of the town in which they are resident, certifying to the fact that they require aid.

SELF-HELP

Good opportunities are afforded for self-support in part or in whole to those students who choose to avail themselves of them. But much depends upon the determination and the ability of the student applying for work. Some exceptional men have succeeded in paying their way through college. Not a few have paid a large share of their necessary expenses. Many have earned a small part of the cost of their college course. But in every case the student should have funds enough to pay his way until he can adapt himself to his new environment and show what he is capable of earning. The long summer vacation allows the student to earn good wages at home or elsewhere. There are no college exercises on Saturdays so that work for wages may then be performed. But no student should attempt to engage in work that will interfere with his success in his studies. The labor fund is employed in paying for the labor of students who require work, but the fund is limited and the college cannot promise employment to all applicants. Each case must be determined according to the circumstances of the time and the qualifications of the man.

RELIGIOUS SERVICES

Chapel services are held every week day at 8 A. M. and public worship in the chapel every Sunday at 9-15 A. M. Further opportunities for moral and religious culture are afforded by Bible classes taught by one of the professors and other teachers for an hour every Sunday afternoon, and by a religious meeting Thursday evening, under the auspices of the College Young Men's Christian Association.

SCHOLARSHIPS

ESTABLISHED BY PRIVATE INDIVIDUALS

Mary Robinson fund of one thousand dollars, the bequest of Miss Mary Robinson, of Medfield.

Whiting Street fund of one thousand dollars, the bequest of Whiting Street, Esq., of Northampton.

Henry Gassett fund of one thousand dollars, the bequest of Henry Gassett, Esq., of North Weymouth.

Tuition is free to citizens of the United States. Citizens of Massachusetts however, in accordance with an Act of the Legislature, must make application to the senator of the district in which they live for a free scholarship that covers the charges for tuition. Blank forms of such application may be obtained from the president of the college.

DEGREES

No honorary degrees are conferred.

Those who complete the four years course will receive the degree of Bachelor of Science. The diploma is signed by the governor of the Commonwealth as well as by the president of the college.

Those who receive this degree may receive also the degree of Bachelor of Science from Boston University, for which a fee of ten dollars is charged; provided that the candidate in addition to the college course shall have mastered in a preparatory school a three year's preparatory course in studies beyond those commonly presented in the grammar schools of Massachusetts.

Those who complete the assigned courses will receive the degree of Master of Science for which a fee of ten dollars must be paid to the treasurer of the college.

Those who complete the three years' course of study required and present a satisfactory thesis will be given the degree of Doctor of Philosophy. The fee for this degree is twenty-five dollars.

Those to whom degrees are awarded must present themselves in person at commencement to receive them.

Prizes

The following prizes are offered annually for proficiency in the work of several of the departments of collegiate study:

AGRICULTURE

The Grinnell prizes, the first of twenty-five dollars, and the second of fifteen dollars, given by the late Hon. William Claflin, of Boston, in honor of the late George B. Grinnell, Esq., of New York, to those members of the senior class who produce the best and the second best examinations, oral and written, in theoretical and practical agriculture.

BOTANY

The Hills prizes, the first of twenty dollars, and the second of ten dollars, given by the late Henry F. Hills, of Amherst, to those members of the senior class who produce the best and the second best herbariums. Also a prize of five dollars, to that student of the senior class who produces the best collection of native woods.

ENGLISH

The Flint prizes, the first of thirty dollars, and the second of twenty dollars, given by Mr. Charles L. Flint, of Boston, of the class of 1881, to those members of the junior class, under certain restrictions, who produce the best and the second best orations. Both composition and delivery are considered in making the award.

The Burnham prizes, amounting in all to eighty dollars, given by the late T. O. H. P. Burnham, of Boston, to members

of the sophomore, and the freshman class, for excellence in composition work and in declamation. Composition work, in competition for these prizes is confined to the second semester of the sophomore year. Under certain restrictions, a first prize of twenty dollars, a second prize of ten, and a third prize of five are awarded. Declamation work, in competition for these prizes is confined to the second semester of freshman year. Under certain restrictions, a first prize of twenty-five dollars, and a second prize of twenty are awarded.

SPECIAL PRIZES

Special prizes are occasionally offered by various departments.

MILITARY DIPLOMAS

The commandant is authorized to give military diplomas, countersigned by the president of the college, to those men receiving the degree of Bachelor of Science who by their work in the military department during their course in college may have shown themselves worthy of distinction. These diplomas recommend those receiving them for commissions in the United States army or in the militia of the several states, vouching that they are fitted to fill the position of a commissioned officer.

WINTER COURSE PRIZES

The Dairy prizes, given by the Massachusetts Society for Promoting Agriculture, to members of the short winter course. Two sets of prizes are offered. The first set consists of three prizes of fifty, thirty, and twenty dollars, respectively, given for general excellence in all branches of the course as offered. The second set consists of three prizes of twenty-five, fifteen, and ten dollars, respectively, for excellence in the making of butter.

Award of Prizes

1901—1902

Grinnell Agricultural Prizes—Senior

First prize: Joshua Herbert Belden
Second prize: Edward Boyle Saunders

Hills Botanical Prizes—Senior

First prize: Arthur Lincoln Dacy
Second prize: John Martin Dellea

Flint Oratorical Prizes—Junior

First prize: Harry James Franklin
Second prize: Myron Howard West

Burnham Declamation Prizes—Sophomore and Freshman

First sophomore prize: George Edmund O'Hearn
Second sophomore prize: Arthur Lee Peck
First freshman prize: Herbert Harold Goodenough
Second freshman prize: George Howard Allen

Military Honors—Senior

The following cadets were reported to the Adjutant General U. S. Army, and to the Adjutant General of Massachusetts, as having shown special aptitude for military service:

Arthur Lincoln Dacy
Howard Lawton Knight
Edward Boyle Saunders

Massachusetts Dairy Prizes—Winter Course

First set (general excellence):
First prize: George Weigold
Second prize: James Edwin Stultz
Third prize: Walter Aiken Conant

Second set (butter making):
First prize: Fred Porter Hall
Second prize: George Weigold
Third prize: Frederick Wade Richardson

Special Prize for Best Knowledge of Use of Fertilizer on Dairy Farm (given by W. H. Bowker)

George Weigold

Special Prize for Best Knowledge of Use of Fertilizer on Grass Land (given by B. von Herff)

Walter Edward Brigham

Degrees Conferred in 1902

DOCTOR OF PHILOSOPHY

Hinds, Warren Elmer	Townsend

BACHELOR OF SCIENCE

Belden, Joshua Herbert*†	Newington, Conn.
Bodfish, Henry Look *†	Tisbury
Carpenter, Thorne Martin*	Foxboro
Church, Frederick Richard*†	Ashfield
Claflin, Leander Chapin*†	Philadelphia, Pa.
Cook, Lyman Adams*†	Millis
Cooley, Orrin Fulton†	South Deerfield
Dacy, Arthur Lincoln*†	Boston
Dellea, John Martin*†	North Egremont
Dwyer, Chester Edwards*†	Lynn
Gates, Victor Adolph*†	Memphis, Tenn.
Hall, John Clifford*†	Sudbury
Hodgkiss, Harold Edward*†	Wilkinsonville
Kinney, Charles Milton†	Northampton
Knight, Howard Lawton*†	Gardner
Lewis, Claude Isaac*†	Unionville
Morse, Ransom Wesley*†	Belchertown
Paul, Herbert Amasa†	Lynn
Plumb, Frederic Henry*†	Bridgeport, Conn.
Saunders, Edward Boyle*†	Southwick
Smith, Samuel Leroy*†	South Hadley
West, David Nelson*†	Northampton

* Degree of Boston University
† Military Diploma

Graduate Students

For the Degrees of M. Sc., and Ph. D.

Ballou, Henry Arthur	Amherst
B.Sc. Massachusetts Agricultural College 1895	
Billings, George Austin . . .	South Deerfield
B.Sc. Massachusetts Agricultural College 1895	
Haskins, Henri Darwin . . .	North Amherst
B.Sc. Massachusetts Agricultural College 1890	
Hodgkiss, Harold Edward . . .	Wilkinsonville
B.Sc. Massachusetts Agricultural College 1902	
Knight, Howard Lawton . . .	Gardner
B.Sc. Massachusetts Agricultural College 1902	
Morrill, Austin Winfield . . .	Tewksbury
B.Sc. Massachusetts Agricultural College 1900	
West, David Nelson	Northampton
B.Sc. Massachusetts Agricultural College 1902	
	Total 7

Special Students

TWO YEARS' COURSE FOR WOMEN

Hunt, Justine	*Newton*	Dining Hall
Hyde, Edith Lucretia	*Baltimore, Md.*	
Russell, Ida Josephine	*Amherst*	
		Total 3

Under-Graduate Students

SENIOR CLASS

Allen, William Etherington	*Winthrop*	18 South College
Bacon, Stephen Carroll	*Leominster*	20 South College
Barrus, George Levi	*Goshen*	20 South College
Bowen, Howard Chandler	*Rutland*	11 South College
Brooks, Philip Whitney	*Cambridge*	12 South College
Cook, Joseph Gershom	*Clayton*	Mr. Thomson's
Franklin, Henry James	*Bernardston*	116 Pleasant St.
Halligan, Charles Parker	*Roslindale*	12 South College
Harvey, Lester Ford	*Woodbury, Conn.*	1 South College
Hood, William Lane	*Vandiver, Ala.*	Boarding Club
Jones, Gerald Denison	*South Framingham*	11 South College
Lamson, George Herbert, Jr.,	*East Hampton, Conn.*	1 South College
Monahan, Neil Francis	*South Framingham*	96 Pleasant St.
Nersessian, Paul Nerses	*Marash, Turkey*	Boarding Club
Osmun, Albert Vincent	*Brooklyn, N. Y.*	2 South College
Parsons, Albert	*North Amherst*	North Amherst
Peebles, William Warrington	*Washington, D. C.*	32 North College
Poole, Elmer Myron	*North Dartmouth*	5 South College
Proulx, Edward George	*Hatfield*	14 South College
Robertson, Richard Hendric	*Somerville,*	D. G. K. House
Snell, Edward Benaiah	*Lawrence,*	Mr. Thomson's
Tinkham, Charles Samuel	*Roxbury,*	D. G. K. House
Tottingham, William Edward	*Bernardston,*	10 North College
Tower, Winthrop Vose	*Melrose Highlands*	14 South College
West, Myron Howard	*Belchertown*	116 Pleasant St.

Total 25

JUNIOR CLASS

Ahearn, Michael Francis	*South Framingham*	Plant House
Back, Ernest Adna	*Florence*	Insectary
Blake, Maurice Adin	*Millis*	6 Phillips St.
Couden, Fayette Dickinson	*Amherst*	17 South College
Elwood, Clifford Franklin	*Green's Farms, Conn.*	96 Pleasant St.
Fahey, John Joseph	*Pittsfield*	Mr. Thomson's
Fulton, Edwin Stanley	*Lynn*	Hatch Expt. Station Chemical
Gay, Ralph Preston	*Stoughton*	21 North College
Gilbert, Arthur Witter	*West Brookfield*	28 North College
Gregg, John William	*Dorchester*	23 North College
Griffin, Clarence Herbert	*Winthrop*	18 South College
Haskell, Sidney Burritt	*Southbridge*	Professor Cooley's
Henshaw, Fred Forbes	*Templeton,*	25 North College
Hubert, Zachary Taylor	*Pride, Ga.*	31 North College
Lewis, Clarence Waterman	*Melrose Highlands*	Mr. Thomson's
Newton, Howard Douglas	*Stockbridge*	4 South College
O'Hearn, George Edmund	*Pittsfield*	Mr. Thomson's
Parker, Sumner Rufus	*Brimfield*	Hatch Expt. Sta'n Botanical
Peck, Arthur Lee	*Hartford, Conn.*	28 North College
Quigley, Raymond Augustine	*Brockton*	Mr. Thomson's
Raymouth, Reuben Raymond	*Goshen*	D. G. K. House
Staples, Walter Abbe	*Westboro*	22 North College
White, Howard Morgan	*Springfield*	9 South College

Total 23

SOPHOMORE CLASS

Adams, Richard Laban	*Jamaica Plain,*	101 Pleasant St
Allen, George Howard	*Somerville*	15 South College
Barnes, Hugh Lester	*Stockbridge*	4 South College
Bartlett, Francis Alonzo	*Belchertown*	116 Pleasant St.
Brett, Clarence Elmer	*Brockton*	Professor Brooks'
Carter, Chester Merriam	*Leominster*	6 North College
Craighead, William Hunlie	*Boston*	32 North College
Crosby, Harvey Davis	*Rutland*	Mr. Dickinson's
Cushman, Esther Cowles	*Northampton*	Northampton
Filer, Harry Burton	*Dwight*	27 North College
Gardner, John Joseph	*Milford*	Plant House
Goodenough, Herbert Harold	*Johannesburg, S. A.*	25 North College
Hall, Arthur William, Jr.	*North Amherst*	North Amherst
Hatch, Walter Bowerman	*Falmouth*	7 South College
Hill, Louis William	*Bridgeport, Conn.*	7 South College
Holcomb, Charles Sheldon	*Tariffville, Conn.*	66 Pleasant St.
Hunt, Thomas Francis	*Amherst*	Hatch Expt. Station Barn
Hutchings, Frank Farley	*South Amherst*	116 Pleasant St.
Ingham, Norman Day	*Granby*	22 North College
Kelton, James Richard	*Orange*	19 Phillips St.
Ladd, Edward Thorndyke	*Winchester*	6 South College
Lyman, John Franklin	*Amherst*	14 North College
Merrill, Charles Edward, Jr.	*Melrose*	24 North College
Munson, William Anson	*Aurora, Ill.*	15 South College
Newhall, Edwin White, Jr.	*San Francisco, Cal.*	84 Pleasant St.
Paige, George R.	*Amherst*	Veterinary Laboratory
Patch, George Willard	*Arlington Heights*	16 South College
Paul, Augustus Russell	*Framingham Center*	96 Pleasant St.
Pray, Try Civille	*Natick*	6 South College
Richardson, Justus Cutter	*Lowell*	86 Pleasant St.
Sanborn, Monica Lillian	*Salem*	96 Pleasant St.
Sears, William Marshall	*Brockton*	14 North College
Swain, Allen Newman	*New Dorchester*	116 Pleasant St.
Taylor, Albert Davis	*Westford*	86 Pleasant St.

Thompson, Harold Foss	*Roxbury Crossing*	Mr. Dickinson's
Tinkham, Henry Buffington	*South Swansea*	D. G. K. House
Tupper, Bertram	*West Newton*	Hatch Expt. Sta. Barn
Walker, Lewell Seth	*Natick*	23 North College
Walsh, Thomas Frederick	*Ayer*	
Whitaker, Chester Leland	*Somerville*	17 South College
Williams, Percy Frederick	*Natick*	D. G. K. House
Willis, Grenville Norcott	*Becket*	16 South College
Yeaw, Frederick Loring	*Winthrop*	Hatch Expt. Sta. Botanical

Total 43

FRESHMAN CLASS

Abbott, Chester Denning	*Andover*	12 East Pleasant St.
Bacon, Roland Aldrich	*Leominster*	D. G. K. House
Brydon, Robert Parker	*Lancaster*	26 North College
Carey, Daniel Henry	*Rockland*	7 North College
Carpenter, Charles Walter	*Monson*	5 McClellan St.
Chapman, George Henry	*New Britain, Conn.*	13 South College
Colton, William Wallace	*Pittsfield*	11 South College
Connelly, Thomas Henry	*Boston*	
Cowles, Edward Russell	*Deerfield*	101 Pleasant St.
Cutter, Frederick Augustus	*Pelham, N. H.*	96 Pleasant St.
Farrar, Allan Dana	*Amherst*	29 Northampton Road
Ferren, Frank Augustus	*Peabody*	56 Pleasant St.
Foster, Samuel Cutler	*Boston*	29 McClellan St.
French, George Talbot	*Tewksbury*	10 North College
Gaskell, Edwin Francis	*Hopedale*	5 North College
Goodal, Ray Coit	*Suffield, Conn.*	5 McClellan St.
Hartford, Archie Augustus	*Westford*	96 Pleasant St.
Hasting, Addison Tyler, Jr.	*Natick*	11 North College
Hayward, Afton Smith	*South Amherst*	101 Pleasant St.
Hersen, Albert Wood	*Westboro*	19 Phillips St.
Hood, Clarence Ellsworth	*Millis*	9 Phillips St.
Jones, Louis Franklin	*Somerville*	56 Pleasant St.
Keith, Earl Wadsworth		
Kennedy, Frank Henry	*South Boston*	8 South College
Mahoney, Francis Watson	*Boston*	8 South College
Markham, Joseph	*Ayer*	
Martin, James Edward	*Brockton*	29 McClellan St.
Morse, Stanley Fletcher	*Watertown*	9 South College
Moseley, Louis Hale	*Glastonbury, Conn.*	15 North College
Mudge, Everett Pike	*Swampscott*	12 North College
O'Neil, William James		
Peakes, Ralph Ware	*Newtonville*	11 South College
Prenn, Joseph	*Amherst*	7 North College
Racicot, Arthur Alphonsé, Jr.	*Lowell*	96 Pleasant St.
Rogers, Stanley Sawyer	*Boston*	19 Phillips St.
Russell, Harry Merwin	*Bridgeport, Conn.*	15 North College

Russell, Herbert Osborne	*North Hadley*	North Hadley
Scott, Edwin Hobart	*Cambridge*	McClellan St.
Shannon, Alonzo Henry	*Worcester*	31 North College
Sleeper, George Warren	*Swampscott*	86 Pleasant St.
Spurr, Fred Yerxa	*Melrose Highlands*	24 North College
Stevens, Fred Oramel	*Nashua, N. H.*	56 Pleasant St.
Strain, Benjamin	*Mt. Carmel, Conn.*	27 North College
Suhlke, Herman Augustus	*Leominster*	D. G. K. House
Sullivan, Patrick Francis	*Amherst*	19 Spaulding St.
Taft, William Otis	*East Pepperell*	13 South College
Tannatt, Willard Colburn	*Dorchester*	29 McClellan St.
Tirrell, Charles Almon	*Plainfield*	56 Pleasant St.
Watkins, Fred Alexander	*Hinsdale*	26 North College
Webb, Paul	*New Haven, Conn.*	66 Pleasant St.
Wellington, Richard	*Waltham*	8 North College
White, Vernon Olise	*Attleboro*	10 South College
Wholley, Michael Francis	*Cohassett*	56 Pleasant St.
Wood, Alexander Henry Moore	*Easton*	19 Phillips St.
Wood, Herbert Poland	*Hopedale*	5 North College

Total 55

Winter Course Class of 1903

Bailey, Norman F.	*Pittsfield*
Blessing, John M.	*Albany, N. Y.*
Carlsson, Axel Robert	*Cambridge*
Clark, Albert Philip	*Pittsfield*
Colburn, Ned Springer	*Haverhill*
Cooke, Ernest Hubbard	*Austerlitz, N. Y.*
Dorling, Samuel William	*Spencer*
Dwight, Daniel Hunt Miller	*Brewster*
Eaton, Harvey Dana	*North Reading*
Folsom, Mrs. Sara Elizabeth	*Revere*
Gage, William Allen	*Crown Point, N. Y.*
Gerber, Nelson	*Webster*
Gilbert, Solon Mowey	*Auburn*
Goold, James	*Albany, N. Y.*
Kilbon, Marshall Edwards	*Oberlin, Ohio*
King, George William	*Dudley*
Kohles, Herman	*Fitchburg*
MacDonald, Raymond Lewis	*Brookline*
Macomber, Walter White	*Sturbridge*
Mebane, Albert	*Greensboro, N. C.*
Miller, Fred	*East Walpole*
Mower, John Laidlaw	*Litchfield, Conn.*
Ramsdell, Elmer Pitts	*West Newton*
Rogers, Harry Fred	*Westboro*
Scott, Richard	*Shrewsbury*
Sonoda, Takeshi Kagashima	*Japan*
Stygles, Clarence Herman	*Hyde Park, Vt.*
Williamson, Oran Ethan	*Altamont, N. Y.*

Total 28

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